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23 July 1984

# USSR Report

CONSTRUCTION AND RELATED INDUSTRIES

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23 July 1984

## USSR REPORT

### CONSTRUCTION AND RELATED INDUSTRIES

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## CONSTRUCTION PLANNING AND ECONOMICS

### LISSR GOSSTROY CHAIRMAN ON MANAGEMENT EXPERIMENT

Moscow SIROITEL'NAYA GAZETA in Russian 15 Apr 84 p 3

[Interview with LiSSR Gosstroy Chairman R. M. Sakalauskas by STROITEL'NAYA GAZETA correspondent V. Tumanov: "The Essence of Partnership"]

[Text] The December 1983 CPSU Central Committee Plenum noted that it is necessary to continually and persistently speed up scientific-technical progress. This commits us to improving the economic planning and management and the style and methods of socialist economy. In compliance with these requirements an experiment is being conducted in Lithuania. This experiment directs those involved in projects and construction to lower material and labor costs.

Our correspondent V. Tumanov asked LiSSR Gosstroy chairman R.M. Sakalauskas to answer a number of questions associated with accomplishing this goal.

[Question] The experiment which began in the republic on 1 July has the goal of more closely tying together the interests of factories which are mutually reliant. Romual'das Mikolovich, please explain the essence of this problem.

[Answer] First I would like to tell you quickly about the interrelationship that has formed among planners, customers and builders. Planners' desires to maximally use economic decisions and scientific and technical achievements are very often not supported by the other two groups. You can understand why. For example, to lower their estimated cost by using construction methods which they should master, additional expenses are necessary, and this in itself worsens the technical-economic indicators. Builders are interested in expensive estimates because their profits, salary fund, material resources and economic incentives depend on this.

Theoretically, we have long known that it is necessary to coordinate the activity of all partners and to get them interested in the end result. But in practicality it is difficult to get to this point. This is being prevented primarily by the current pricing system which does not stimulate price reductions on capital construction.

Our neighbors very energetically undertook to solve this economic paradox and BSSR Gosstroy Chairman V. Yevtukh thoroughly covered this in his article "The Belorussian Experiment" (SG, 19 Oct 1983). I visited Belorussia with a group of specialists and we got to know the details and provisional instructions. Based on their experience we began on own experiment. The initial results, while admittedly modest, show that the primary goal is achievable in that they have managed to tie together the interests of mutually allied factories.

[Question] Doesn't the lack of pricing stability on construction products affect the experiment?

[Answer] Yes, the streamlining of production must be based on the application of stable construction product prices as is done in the GDR, where as a rule prices remain constant during a five-year plan and are based on a project's unit of power, area, volume, length and sometimes on the project as a whole. However, these prices still have to be developed in our country. Meanwhile we use estimated construction costs.

[Question] Won't increasing the strictness of requirements on economic projects cause the deterioration of operational features of buildings?

[Answer] Conservation of material and labor resources and reduction of project estimated costs must be attained through using progressive planning and construction decisions, appropriate materials, advanced technology and more rational engineering network schemes. All of this in and of itself must promote the improvement of operational features of projects.

[Question] Isn't it possible to offer more substantive and realistic economic incentives to the partners?

[Answer] That is certainly possible. According to a methodological proposal developed, half of the realized savings are being directed for economic incentives to the partners. And it is distributed as follows: 17.5 percent is spent to provide incentives to workers in planning-prospecting organizations, 30 percent to contract organization workers and 2.5 percent to customers for promoting conservation measures without loss of quality. Payments to the government budget make up 25 percent and contracting organizations have many more methods to compensate for the increase in production expenses associated with introducing new equipment.

[Question] Would you give our readers an idea of the scale of the experiment and the anticipated economic effect.

[Answer] Initially Gosstroy design organizations and republic Ministroy and Minsel'sstroy contracting organizations are taking part in the experiment. At the present time we are linking municipal, kolkhoz, road and land-improvement planning. Later we intend to draw other planning organizations

working for our republic into the experiment. Thirty-five projects for which planning estimate documentation was completed before 1983 and whose construction is intended for 1984-5 were selected. Their total estimated cost is 144 million rubles.

Workers of the Institute for City Construction Planning intend to reduce the estimated cost by 0.8 percent at Uten Trust construction sites by using efficient methods for putting up monolithic foundations without casings. Changing the curve of a collector during construction of the sewer system in the Pashilaychyay apartment in Vilnius will make it possible to save more than 30,000 rubles.

By improving construction of multi-level industrial buildings, workers at the institute of Industrial Construction plan to lower the estimated cost of a babyhood factory in Panevezhis by 150,000 rubles or 1.3 percent.

Workers in the Institute for Agricultural Construction Planning outlined a number of economic decisions. For example, the use of boring and trenching foundations and a more rational solution to vertical planning at a 400-cow milk complex at the Antal'ge Sovkhoz in Uten Rayon will save 40,000 rubles. Rational use of local material (dolomite stone, porous asphalt in concrete and gravel) during expansion of the hothouse factory combine in the Panevezhis horticultural sovkhov allowed a 20,000 ruble or 1 percent reduction in labor costs.

According to preliminary calculations, the savings from reducing the estimated cost in 35 projects will be 860,000 rubles, or 0.6 percent of the total cost. 150,000 rubles will be spent on economic incentives for planners and this will make it possible to increase the economic incentive fund on the average by almost 20 percent per republic Gosstroy project organization. We are convinced that the final savings total will be greater.

[Comment] Since this good tradition of competition by Lithuanian and Belorussian builders was established, allow me to wish success to the participants of the important economic experiment from Stroitel'naya Gazeta.

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## CONSTRUCTION PLANNING AND ECONOMICS

### STROYBANK OFFICIAL ON CREDITING CONTRACTING ORGANIZATIONS

Moscow FINANSY SSSR in Russian No 3, Mar 84 pp 36-40

[Article by G. K. Levina, deputy chief of the Economic Planning Administration of USSR Stroybank, and V. I. Zhuravleva, division chief]

[Text] Short-term bank credit has a large role to play in successful solution of the problem of increasing the efficiency of capital investments.

Credit takes part in every stage of the circulation of the working capital contract organizations, from payments for incoming materials, for services, and for wages, to the sale of the finished product of construction. Thus a stable financial basis, dependent above all on credit extended for costs represented by work in process, has been created for contract organizations so that they can fulfill planning targets. On a regular basis, twice a month, the bank issues credit to cover the costs incurred by the contractor in building enterprises and complexes, phases and projects near completion, and in periods between reimbursement of actual costs credit is issued to cover upcoming expenditures in proportion to the planned 15-day volume of work to be done with the organization's own resources. The credit makes it possible to settle accounts with subcontractors for finished complexes and has an active part to play in the stage of selling the marketable construction product: contractors receive loans for the period in which billing documents are made out and while they are en route, until the payment is received, and clients receive credit to build up resources to pay for the construction product. Credit is constantly circulating within contract organizations: 1.8 billion rubles for upcoming expenditures, i.e., twice as much as the required "own" working capital for work in process; 48 billion to cover costs represented by work in process; and as much as 5.5 billion rubles for completion of settlement for the finished construction product.

Under the decree of the CPSU Central Committee and USSR Council of Ministers on improvement of the economic mechanism (No 695) the bank's credit operations related to the formation and movement of inventories necessary for construction work have also expanded. In the 3 years since payment credit has been issued under the conditions defined in the decree's Point 57 (1980-1982) contract organizations and construction projects have obtained from Stroybank 96 billion rubles to pay bills to suppliers, or 1.4-fold more than in the 3 previous years. More than 90 percent of this amount was extended to contract

organizations. In 1982 they received 10 billion rubles to cover above-allowance inventories of building supplies, fabrications, components and modular units. The most sizable amounts of credit were extended to build up inventories of contract organizations working on the BAM [Baykal-Amur Main Rail Line], construction projects in the fuel and energy complex, and main gas pipeline systems--construction projects which have the greatest importance to economic policy.

It should be noted that this type of credit is also more associated with payments at the present time. Provision has been made so that when contract organizations have a temporary shortage of funds, bills sent to them for inventories being financed with credit are paid with planned loans; overdue bills for these inventories may also be paid from the loan account opened for the credit financing of above-allowance inventories if after the loan was issued for the inventories which had been paid for the contract organization still has an unused amount of credit and does not have a debt to the bank that is in arrears.

The development of credit relations has been manifested not only in a broadening of the limits of credit, but also in a certain simplification of the mechanics of obtaining and repaying loans. For example, credit to build up the required working capital for outlays representing work in process is issued once at the beginning of the year, and so that it is constantly in circulation within contract organizations, it is not taken into account as a source when the next credit is issued to cover expenditures actually incurred.

We would like to discuss in more detail the nature of this credit.

Now that the marketable construction product has become the basis for settlement of accounts between the client and the contractor, the settlement period has, of course, become much longer and corresponds to the construction time of the enterprise, complex, phase or project. When the method of covering the costs of work in process with credit is used, those expenditures can be compensated until such time as construction is completed only with credit, which is moreover supplied at the same intervals established for scheduling construction.

A dual approach can be taken. Either to schedule the credit to cover the costs of work in process as frequently as possible or to do it at the end of a specified period, allowing the contractor at the same time a standard amount of working capital to make payments to suppliers and to pay wages during the period between installments of the credit. The second method, which requires less work for the personnel of the bank and the financial services of contract organizations, has been chosen. Accordingly the standard amount of working capital must be related to the interval between installments of credit to cover the costs of work in process. The first of the month has been established as the date for the credit installment to be issued, this being the date for compiling the balance, which makes it possible to check the correctness of the figures so that the credit can be issued even by the 16th.

It should be said that although there are four types of credit taking part in the process of the creation and sale of the finished construction product (credit to build up standard working capital, credit to cover outlays actually made, credit to cover the period required for the processing of billing documents for the given construction product, and credit to cover billing documents en route), these loans are scheduled on the basis of a single document of the contract organization, which includes the amount of expenditures made for work in process and the value of work done on enterprises, complexes and projects which have been delivered, and they are charged to a single loan account.

The procedure for priority assignment of newly issued credits to repay unsecured and overdue loans corresponds to the basic principles of bank credit financing. In addition, priority use of the new credits to settle overdue loans, i.e., the more "expensive" ones, reduces the amount of interest which contract organizations must pay and helps them to obtain special-purpose credits, which are issued when there is no indebtedness under prior loans or when such indebtedness is long overdue. The procedure for repayment of credit by crediting receipts from clients to pay for the marketed product of construction directly into the loan account is also technically simple.

At the same time the transition to the credit financing of the costs of work in process until the enterprises, independent complexes, phases or projects are actually delivered presupposes closer bank monitoring of adherence to planned construction times. Within a consolidated project a need has arisen to organize monitoring of each of its components, above all the makeup of the costs of work in process.

The participation of credit in supporting the circulation of the working capital contract organizations is based to a considerable degree on the principle of continuous credit financing of the costs of unfinished construction, which was envisaged by decree No 695 of the CPSU Central Committee and USSR Council of Ministers, mentioned above.

Since certain economists have incorrectly interpreted the principle of continuous credit financing of the costs of work in process, we would like to call attention to the fact that the decree stipulates only one condition for continuity: violation of the planned deadline for delivery.

We should also emphasize that implementation of this principle presupposes above all that the bank, construction organizations and their superior authorities monitor more closely the speedy completion of independent complexes, phases and projects whose completion deadlines have not been met. Yet the economic and financial services of ministries and departments are not paying due attention to this matter, although even today more than 20 percent of outstanding loans covering the costs of work in process concerns projects whose delivery deadlines have passed. According to data of Stroybank institutions, the level of technical preparedness of such projects averages 50 percent, and one-third of them less than 50 percent, and one-third 80 percent or more. Performance of the amount of work remaining at construction projects with high technical readiness, which sometimes is quite insignificant,



would make it possible to put them in operation and to reduce work in process.

Of all the projects not delivered on schedule, 20 percent were not included in the plan for the marketable output of construction in 1983. This means that when the planning was done they were not given priority attention, and minimum periods of time for completion of construction are not set in connection with inclusion in the plan.

For example, the trust "Smolenskpromstroy" began in 1977 to build the wood-working combine of USSR Ministroy [Ministry of Construction], which had an estimated cost of 5.3 million rubles. At the beginning of 1983 the technical readiness of the project was 86 percent, but the final activation of the combine's capacities was scheduled for the third and fourth quarters of 1983. The contract organization, then, must pay the bank eightfold higher interest on the credit for at least two quarters.

Even now, according to the data of Stroybank institutions, on projects for production purposes alone settlement "for the enterprise, for phases of construction" have a share of almost 20 percent, and settlement "for complexes capable of independent operation"--54 percent. Yet quite often the independent complexes are broken down both in the planning stage and also in the stage of delivery of the marketable construction product. Structures which by their nature do not represent the same product are eliminated from them, since they are not producing products, but are rendering services. As a consequence structures with an estimated cost under 1 million rubles have a high share among those not delivered on schedule. And on the whole the average estimated cost per structure which has not been delivered on time does not exceed 700,000 rubles.

Attention is also drawn to the fact that these projects include many wiring and cleaning installations, enclosures, facilities for water supply and social amenities, boilerrooms, garages, and temporary buildings and installations.

As in the past, there is a serious problem in capital construction--the punctuality of settlements for the delivered construction product. There is a procedure in effect aimed at speeding up settlement: the value of work items on enterprises (projects) which have been completed and delivered is accepted for credit financing if the billing documents on it are presented to the bank on time. At present these conditions are not being observed by all contract organizations by any means. And the point is not at all that 5 days is not enough for writing up the demand for payment or draft. The reason is more serious: the continuing practice of delivering projects which have defects and whose quality is low. While the client does sign the document signifying acceptance of the complex or project, he still does not risk paying for it.

Contract organizations which do not submit settlement documents to the bank punctually for the delivered construction product not only do not receive funds from clients, but they also relinquish the right to the special-purpose credit. Significant amounts are constantly diverted to their unpaid accounts



receivable. It is this that largely determines the level of creditworthiness of contract organizations.

At the same time, as shown by an analysis of the targeted use of payment credit, unpaid accounts receivable for the delivered construction product are the principal factor in increasing the amount of that type of credit taken and in the length of time which this credit remains in the contractor's circulation. It has to be said that the share of payment credit issued at the higher rate of interest for terms longer than 60 days has over the last 3 years hardly ever dropped below half of the total outstanding debt of contract organizations related to loans of this type.

The experience of introducing payment credit into economic practice under the conditions of Point 57 of the July (1979) decree of the CPSU Central Committee and USSR Council of Ministers confirms that settlement in the national economy cannot be fundamentally improved unless enterprises and organizations fulfill the targets assigned them and strictly observe planning and financial discipline. Otherwise the bank will inevitably be turned into a universal buyer of inventories, even in the case of economic entities which on the basis of their performance are not creditworthy.

The importance of studying the structure of above-allowance inventories not covered by credit is increasing in connection with the need to intensify the effort at economy and at efficient use of physical resources. A problem is arising concerning economical and optimum use of the sizable amounts of own working capital at the disposition of contract organizations, trusts, associations, construction administrations, main administrations, and ministries, one way being to establish standard allowances.

The point is that when settlement for the marketable construction product was introduced, there was an obvious tendency on the part of contract organizations to redistribute the standard allowances on own working capital, making a transfer from work in process to stocks of materials, and within the category of production stocks, to those items on which credit is not granted. In 1981 alone the contract organizations of the principal construction ministries transferred 74 million rubles to increase the allowance on stocks by virtue of a reduction of allowances on costs of work in process. By the beginning of 1983 the structure of the standard allowances on own working capital in the group of these ministries was as follows: 95.9 percent went to build up production stocks and only 2.2 percent for the costs represented by work in process.

The standard allowances are also being improperly distributed by main administrations, administrations, production associations and trusts among subordinate organizations. They are reduced for organizations receiving credit, and those organizations not receiving credit to cover physical inventories are awarded higher allowances, which as a consequence often remain partially unused.

This practice of maneuvering the standard allowances is not contributing to optimum use of physical and financial resources and is unjustifiably reducing

the role of credit in building up inventories. Only 24 percent of the contract organizations are using loans to cover above-allowance inventories. Reducing the allowances of organizations receiving credit in order to "create room" for credit results in its being taken to cover permanent stocks, which means that its repayability to the bank is being lost.

In addition, concentration of the standard allowances on items constituting production stocks is being used by construction ministries as an argument for not terminating the credit financing of costs represented by work in process of organizations which have altogether lost their own resources.

It would seem that construction ministries must make adjustments in the distribution of the standard allowances assigned them. There has to be a substantial increase in the standard allowances for "own" working capital to cover costs represented by work in process so that these resources promote more vigorously the activation of production capacities and projects; a simultaneous reduction of standard allowances on physical inventories will enhance the role of credit in their optimum use. All of this will help to solve the problem of seeking out the special-purpose resource for the granting of credit to build up the standard allowance of working capital in the period between dates for the scheduling of loans to cover costs represented by work in process.

The differentiated approach to enterprises and organizations as a function of their fulfillment of the basic targets of the plan for economic and social development is a most important principle in bank credit financing in a socialist society.

Before a particular penalty is invoked, the bank institution and the management of the organization analyze the causes of the deficiency, inform the local bodies of leadership and the superior authorities, grant a period of 30 days for specific measures to be taken to correct the shortcomings. In many cases organizations improve their activity after the warning and the penalties were not required.

In the initial period of the special regime the credit financing of contract organizations is continued under the guarantee of the superior authority, or the issuance of certain types of loans is terminated. If the organization has not taken the necessary steps and is still failing to fulfill the principal planning targets, is displaying poor management, the bank must not issue it loans for 6 months from the date when it was put under this special regime.

Under the July (1979) decree of the CPSU Central Committee and USSR Council of Ministers differentiation in the process of credit financing is based to a considerable degree on the vigorous use of interest on credit. When planning and credit discipline are lax, interest rates are raised, while minimum rates are set on planned credit whose purpose is to meet the normal need of organizations for additional resources.

We would like to emphasize that the collection of interest on credit is not a payment for the "services" of the bank, is not remuneration in the form of a commission. This is an active form whereby the bank exerts economic pressure on the activity of the borrowers.

Recently certain authors in the press have exaggerated the importance of the function of interest in providing the revenues of the banking system, reducing the purpose of the bank's interest rate policy exclusively to that. It is worthwhile to recall once again the subordinate nature of this function in the socialist context. This question has been examined in considerable detail in the writings of Soviet economists.

When the level of interest rates on loans was set, it was assumed that interest would not be paid on the giro accounts of enterprises and organizations and on accounts for financial appropriations. Otherwise the level of the interest rates would have been higher. The average interest rate in 1982 on short-term credit issued to contract organizations (including delinquent loans) was 1.55 percent.

Experience over more than 2 years shows that introduction of the new system of interest rates has increased the importance of this economic category. Organizations performing well have a greater interest in a benefit like cutting in half the rate of interest on the use of loans. For example, this benefit increased transfers to incentive funds by 18,600 rubles for organizations of the trust "L'vovzhilstroy" of UkSSR Ministry of Industrial Construction.

At the same time, the system of interest rates which are sharply differentiated as a function of the nature of the loan clearly reflects in the proportion and structure of interest payments the deficiencies in the economic and financial activity of organizations receiving credit. In 1982 contract organizations paid almost half of the interest for the use of loans taken because of violations of planning, financial and credit discipline: on the expenditures represented by work in process on projects not delivered in time, payment credit with terms longer than 60 days, and delinquent loans. The interest on these credits comprises above-plan payments on the use of the loan. More than 70 percent of this is made up of interest on payment credit and on delinquent loans.

The principal reasons for taking credits of this kind are that contract organizations do not fulfill plans for financial results, they have excessive inventories, they do work on projects under construction in which there have been violations of planning and financial discipline, and especially, as has already been said, they have unpaid accounts receivable for the marketable construction product delivered to customers.

But the economic pressure exerted by interest on the performance of the organizations receiving the credit is diminished by a number of factors, including shortcomings in planning the amounts of interest to be paid. Checks run by Stroybank institutions have revealed cases when these amounts were hiked up too high because they included interest on delinquent loans, on payment

credit for terms longer than 60 days, and also interest paid at higher rates on loans for expenditures representing work in process. Moreover, in certain cases the "saving" on interest afforded the organization the opportunity to make additional transfers to incentive funds.

Profit is the determining financial source from which payments of interest on credit are made. But the contract organizations of a number of ministries have a substantial proportion of saving and planned accumulation in work in process (unrealized profit) in the breakdown of sources. This creates the possibility of artificially increasing calculated profit and assigning it to incentive funds. In our view standard proportions need to be assigned to sources from which interest on credit is paid.

As is well known, interest has an influence on the economic interests of construction organizations through calculated profit, and ultimately through economic incentive funds. When they do not fulfill plans for activation of production capacities and projects, for the marketable construction product and for financial results, when they do not make optimum use of own and borrowed working capital, and when they consequently pay higher interest rates, contract organizations credit appreciably less to economic incentive funds (14-29 percent, according to calculations).

At the same time profit does not occupy the leading place in formation of the incentive funds of construction organizations. It does not exceed 30 percent of total sources from which they are built up. For example, the material incentive fund is created primarily from bonuses from the wage fund and the resources of customers.

The mutual monitoring of enterprises and organizations over the observance of contract obligations has great importance, and that importance has increased especially under present conditions. Meanwhile a study of this matter has shown that insufficient advantage is taken of possibilities for claims and suits for reimbursement of nonproductive expenditures of enterprises and organizations resulting from payment of higher rates of interest on credit, forfeits, penalties, and fines. Sometimes the proportion of claims and suits filed by construction organizations against customers does not correspond to the economic loss incurred, although customer enterprises which have violated contract discipline are mainly responsible for late activation of capacities and projects. Moreover, certain contract organizations altogether pardon customers who have not seen to delivery of project plans and estimates and preparation of the construction site on time.

This kind of situation inevitably "breaks the chain" of the system of forfeit penalties. After all, its effectiveness is based precisely on finding the last link where the maladjustments have occurred and where contractual relations have broken down. Only in that case are the nonproductive losses of the injured parties compensated.

The practical realization of the provisions of the July (1979) decree, No 695, has raised a number of other problems.

The decree provides that credit on expenditures represented by work in process has a specific source--the assets of customers made available by the transition to settlement for the marketable construction product. The completeness and promptness with which customers fulfill their obligations to mobilize resources for the credit financing of work in process must be the law of the land for the economy, a law whose observance has first importance as a means of fulfilling targets for the marketable construction product and for activation of production capacities and fixed capital. So that the needs of the contractor are satisfied more fully, the bank has established that the issuance of credit on expenditures represented by work in process to each specific contract organization shall not depend on the sum total of resources accumulated for the specific construction site by the customer, but shall be regulated by their proportions for the city, the oblast or the republic as a whole. It should be noted that when expenditures represented by work in process are covered with credit, it not only has become easier to maneuver resources allocated for capital investments, but the collection of the "own" resources of economic authorities for this purpose has also improved substantially.

The planning of credit has also undergone change in connection with improvement of the economic mechanism. Now the drafts of Stroybank's credit plan are drawn up on the principle of the subordination of contract organizations rather than on the basis of their geographic location, which was previously the case. Along with credit secured by above-allowance inventories, since 1981 this principle has been used in planning the need for credit to cover expenditures represented by work in process consisting of construction and installation work and project planning and surveying. This in turn requires enhancement of the role of the ministries and departments in monitoring subordinate organizations' adherence to the planned volume of work in process, the distribution of the annual plan of the marketable construction product by quarters aimed at the most uniform activation of capacity during the year, delivery deadlines, the use of loans for the specified purpose and their timely repayment. This oversight of ministries and departments must be manifested not only in the stage of compiling the credit plan, but especially in the course of its fulfillment.

Unfortunately, ministries, departments and other entities in the economic administration, as well as the organizations granted credit have a poor command of the techniques for determining the anticipated need for credit so as to take into account payments for work items performed and delivered at the end of the quarter and other factors influencing that need. Not uncommonly the total amount by which Stroybank increases the ceilings on credit financing (at the request of ministries and departments) go unused with some organizations, while at the same time there are others that have an additional need for credit in the course of plan fulfillment, and that need is not met promptly.

In striving to relieve themselves of the work of redistribution of credit financing limits among subordinate organizations, in the stage of compiling the draft of the credit plan ministries and departments submit to Stroybank excessively high figures on the need for credit, figures that do not follow

from the projected planning targets for construction. There is a need to increase the degree of soundness of the calculations of short-term credit submitted by ministries and departments.

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## CONSTRUCTION PLANNING AND ECONOMICS

### GOSGRAZHDANSTROY SESSION DISCUSSES CONSTRUCTION DECREE

Moscow STROITEL'NAYA GAZETA in Russian 27 May 84 p 2

[Article: "For Projects -- High Quality; From the Extended Session of the Gosgrazhdanstroy Committee"]

[Text] The State Committee on Civil Construction and Architecture under the USSR Gosstroy [State Committee on Construction Affairs] held an extended committee session entitled "On the Tasks of Gosgrazhdanstroy for Fulfilling the Resolutions of the CPSU Central Committee and the USSR Council of Ministers on Improving the Planning, Organization and Management of Capital Construction." Participating in the meeting were USSR Gosstroy Chairman S. V. Bashilov, Head of the Construction Department Sector of the CPSU Central Committee V. I. Fedorov, Chairman of the Central Committee Professional Union of Workers in Construction and the Construction Materials Industry I. A. Lanshin, First Secretary of the USSR Union of Architects Board of Directors A. T. Polyanskiy, as well as responsible workers of the CPSU Central Committee and the USSR Council of Ministers, and directors and secretaries of the Gosgrazhdanstroy institute party committees.

Gosgrazhdanstroy Chairman I. N. Ponomarev presented a speech.

Having characterized the basic positions of this most important document, the speaker stressed the fact that the development of capital construction and its transformation into a major industrial sector of the country's national economy is the subject of constant attention and concern of the Communist Party and the Soviet government. I. N. Ponomarev dealt in detail with those sections of the resolution by the CPSU Central Committee and the USSR Council of Ministers which told of the tasks for further improvement in project planning and estimate work, for improving the quality of project planning documentation, for maximally increasing the level of industrial application and reducing labor consumption in erecting buildings and structures, and for utilizing the achievements of science and technology



as well as leading domestic and foreign experience in project plans. By its scope of construction-installation work, mass residential-civil construction comprises over 40 percent of the overall volume of the country's capital construction. The success of the work and its final results are determined to a great degree by the quality of the projects adopted for implementation.

In order to provide mass industrial construction of residential houses and buildings of social-domestic function with high quality project documentation, it is necessary first of all to critically evaluate the portfolio of accumulated projects, to select the most well developed and economical ones which correspond in full measure to the increased demands for architectural planning and design decisions. To simplify matters, the speaker noted, it would not hurt to drastically reduce the portfolio of standard projects for residential houses, particularly large-panel houses, since of the 79 series of standard projects currently in effect, only 17 are used. This comprises 72 percent of the overall volume of large-panel house building, while the remaining 62 series account for only 28 percent.

I. N. Ponomarev discussed in detail the problems of further improving methods of standard planning, unification of products, introduction of the Unified Catalog of Building Structures, and activization of the work of local project planning organizations as a necessary condition for implementing the program of decentralization of standard planning. This program is being brought to life for the purpose of more fully considering specific construction conditions, and improving the quality and individuality of architectural decisions.

In connection with the reform of the system of school education in the country, it is necessary to review the lists of effective standard projects for general education school buildings and professional-technical schools, to develop a plan for modernization of the existing fund of schools and professional-technical institutions, and to prepare new standard projects which reflect both the letter and the spirit of the reform.

The fulfillment of the task of improving the quality of residential-civil construction is unthinkable without bringing about order in the application of production capacities of large-panel house building enterprises. The capacities of 504 KPD [large-panel house building] enterprises are being insufficiently utilized, and in a number of cases simply mismanaged. It is necessary not only to accelerate technical retooling and reconstruction of plants, but also to re-orient them toward the output of those products and those standard projects which have been selected and, if need be, improved, to be the best quality and the most economically effective. It would be expedient, said the speaker, to organize this work along the regional principle, creating mixed work groups comprised of representatives from the central and zonal institutes of Gosgrazhdanstroy, the construction ministries and consumer organizations, as well as the local party and soviet organs.



In light of the requirements set forth in the resolution of the CPSU Central Committee and the USSR Council of Ministers, the Gosgrazhdanstroy is faced with crucial tasks in the sphere of urban construction policy, particularly the planning and development of rural populated areas. Work must be stepped up on solving the problems of interrelated development of rural populated areas, on formulating industrial centers, zones, rayons and complexes in the cities and in the rural areas, and on creating urban construction complexes.

In conclusion, I. N. Ponomarev expressed his assurance that the scientific-research and project planning organizations of Gosgrazhdanstroy will do everything necessary in order to successfully realize the program for improving mass residential-civil construction as outlined by the party and by the government.

The discussion following the speech dealt with the specific directions and measures for realizing the resolution of the CPSU Central Committee and the USSR Council of Ministers. Thus, Director of the TsNIIEPzhilishcha [Central Scientific-Research and Planning Institute on Standard and Experimental Design of Residential Housing] B. P. Rubanenko reported that the institute is actively participating in preparing for the transition to a new housing standard (fourth generation projects) in mass residential housing construction. This standard corresponds to the increased social requirements. Concentrating on questions of implementing urban construction policy in the development of cities and individual rayons, the committee Chief of the Urban Planning and Development Administration A. O. Kudryavtsev particularly stressed the importance of the new approach to the principle of territorial planning of capital investments in construction as outlined in the document under discussion.

The main speech already touched upon the problem of more effective utilization of production capacities by the KPD enterprises, said KievZNIIEP [Kiev Zonal Scientific-Research and Planning Institute for Standard and Experimental Design] Director A. I. Zavarov. The institute has developed an effective system of large-panel house building called "Mobil", which comprises not 300-500 grades of products, as most of the effective standard series do, but only 80-100 grades. Based on the experience gained through this experiment, the institute has been able to organize the planning of standard base series for various regions of the country. The presentation by the committee's Construction of Public Buildings and Structures Administration Director Yu. A. Sharonov was devoted to the problems faced by architects and project designers in connection with the school reform being implemented in the country. SibZNIIEP [Siberian Zonal Scientific-Research and Planning Institute for Standard and Experimental Design] Director Yu. M. Kuzin shared his experience on reducing the number of grades of products in standard series intended for development of the country's remote regions.

The committee's Administration of Planning and Development of Rural Populated Areas Chief B. P. Tobilevich dealt with the problems of restructuring the farm and specifically with unresolved questions of planning rural farmstead type residences. V. I. Lepskiy, TsNIIEP Director of Commercial-Domestic Buildings and Tourist Complexes, presented specific proposals for the

further improvement of planning and construction public facilities. USSR Union of Architects Governing Board First Secretary A. T. Polyanskiy spoke out in favor of closer contacts between the representatives of the creative organization of architects and the state organs dealing with architecture.

USSR Gosstroy Chairman S. V. Bashilov also spoke at the meeting.

A decision was adopted outlining specific measures for implementing the resolution of the CPSU Central Committee and the USSR Council of Ministers entitled "On Improving Planning, Organization and Management of Capital Construction."

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## CONSTRUCTION PLANNING AND ECONOMICS

### STRATEGIES FOR INTENSIFYING PRODUCTION IN BUILDING INDUSTRY

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[Article by I. N. Dmitriyev, chief of the Construction Department of the CPSU Central Committee: "Speed Up the Intensification of Production in the Building Industry in Every Conceivable way"]

[Text] The 26th CPSU Congress set the task of basically completing, during the current decade, the transfer of all sectors of the national economy to the path of primarily intensive development and to achieve that the results of production increase substantially more quickly than the expenditures for it. Such a strategic purpose is law-governed in the conditions of developed socialism since only in this way can high economic growth rates and the constant rise of the material and cultural level of the life of the Soviet people be secured.

In his speech at the extraordinary February (1984) Plenum of the CPSU Central Committee, general secretary of the CPSU Central Committee, comrade K. U. Chernenko, emphasized: "As far as the basic directions of the development of our economy are concerned, they have been clearly determined by the party. Intensification, the accelerated introduction of the achievements of science and technology in production, and the realization of large integrated programs--all of this must, in the final analysis, raise the productive forces of our society to a qualitatively new level."

As a sector of the national economy, the building industry is developing consistently. Its technical and organizational level is steadily increasing. During 1980-1982 alone, the capital-labor ratio in the industry increased from 7,100 to 8,200 rubles per worker, or by a factor of almost 1.2. During the past 10 years, the machine-worker ratio of the workers increased by a factor of 2.4. A large industry of prefabricated reinforced concrete has been created, the annual production volume of which during 1983 came to 127 million cubic meters. Purposeful work is being done in regard to the transition to the output of efficient--less material-intensive and energy-intensive--building designs.

Along with this, there are significant reserves for the further increase in efficiency in the industry--the growth of labor productivity and the acceleration of the introduction of projects--which can and must be utilized by means

of the consistent realization of a unified technological policy, the further development of scientific research, the intensification of the integration of science and production, and the broad introduction of scientific-technical achievements. At the same time, the improvement of the state of affairs in capital construction as a whole is being realized at rates which are too slow. Material-intensiveness and labor intensiveness in the building industry are still great, as is the duration of the erection of projects, and labor productivity is growing at clearly inadequate rates.

At the 26th CPSU Congress and subsequent Plenums of the Central Committee of our party, important shortcomings in capital construction were pointed out and it was emphasized that the fulfillment of the annual plans for economic and social development, as well as the five-year-plan as a whole, depends in many respect on the successful work of this sector.

The reasons of the indicated shortcomings, to a certain extent, have to do with the fact that in the development of the material-technical base of the building industry extensive paths of development basically predominated. For the time being, the qualitative growth of the industry of prefabricated reinforced concrete is being realized slowly, the output of designs and articles is developing at inadequate rates, and substantial changes in the structure of the material resources being consumed by the building industry are not taking place. The structure of the construction machinery and equipment park is being improved slowly and their specific capacity is growing inadequately given the simultaneous significant and unjustified increase in the cost of the machines. Almost no machines are produced for work in cramped circumstances during the reconstruction and technical reequipment of existing enterprises. Clearly inadequate is the equipment of building industry workers with the means of small-scale mechanization and tools, the effect of the use of which at the present time is substantially higher than the effect from the expansion of large-capacity machines. Precisely this is one of the main reasons for the disproportion that is taking place between the growth of the equipment and machine ratio of labor, on the one hand, and the growth of its productivity, on the other. For the time being, there are no important quality advances in the level of the organization of the building industry, labor, and administration of building industry production.

The necessity of a significant improvement of work in the building industry is called forth not only by the lagging behind in the solution of a number of questions of the activity in this industry, but is explained, first of all, by the special role of the building industry, which is called upon to promote the transfer of the sectors of the national economy and industry to the path of primarily intensive development.

The intensification of production under socialism represents a form of expanded reproduction, in which the increase of the output of production is attained on the basis of the better utilization of material, financial and labor resources and the use of more efficient and technically modern means of production. The intensification of production is based on the broad introduction of scientific-technical achievements, the improvement of the organization of production, the increase of the cultural and technical level of the workers, and the improve-

ment of the quality of work in all links of the economy. The intensification of production finds its ultimate reflection in the indicators of production efficiency: The growth of labor productivity, the increase of the output-capital ratio, the reduction of material-intensiveness, the improvement of the quality and the reduction of the prime cost of production.

The basic directions of the intensification of public production, the improvement of all work in regard to the acceleration of scientific-technical progress, and a cardinal increase in labor productivity in the sectors of the national economy on the basis of the broad and accelerated practical introduction of the achievements of science, technology and progressive experience, were set forth by the decree of the CPSU Central Committee and the USSR Council of Ministers of 18 August 1983 "On Measures to Accelerate Scientific-Technical Progress in the National Economy."

The intensification of capital construction presupposes, first of all, the reduction of the entire investment cycle, the substantial reduction of the terms of the erection of projects and productive capacities and the acceleration of their being put into operation, the lowering of the volumes of incomplete construction, the reduction of specific capital investments for the creation of new, the reconstruction and technical reequipping of existing productive capacities, the decrease of the material-intensiveness and labor intensiveness of the building industry, the acceleration of the labor productivity growth rates, and the lowering of the prime cost of construction and installation work.

In prospect are real limits of the workers in the building industry--the reduction of the investment cycle to 1/2-2/5 of its previous length, a two-fold increase in labor productivity, and a reduction of material-intensiveness by 20-25 percent.

In order to move to these limits, the sectors of the construction complex must develop in the main directions, which must include the qualitative growth of the production of articles, designs and materials for the building industry; the development and introduction of more economical and industrial volume-planning and design solutions of buildings and installations; the technical perfection and improvement of the structure of the park of construction machinery and devices; and the utilization of advanced domestic and foreign experience. All of the indicated directions are interrelated, mutually condition one another, and in a complex determine the possibilities of reducing the duration of construction, the reduction of its material-intensiveness, and the growth of labor productivity.

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One of the basic directions of intensification in the building industry is the improvement of the planning decisions of the buildings and installations being built, the increase of their economy and their operation qualities on the basis of the introduction of the achievements of scientific-technical progress.

During recent years there has been a significant increase in the technical and economic level of projects. An enormous creative contribution of the planners

is embodied in the very large hydro- and nuclear electric power plants that have been built, in powerful oil and gas pipelines, transportation trunk lines and installations, modern enterprises of various sectors of industry, transportation, communication, and agriculture, and in the construction of new and the development of existing cities, workers' and rural settlements.

The plans envisage the optimal volume and planning solutions of buildings and installations, improved industrial design and production methods of construction and installation work, providing for the reduction of the mass of buildings and installations and the labor-intensiveness of their erection.

The planning solutions of a number of enterprises that have been built and are in the construction stage, of buildings and installations, in particular the Kama Automobile Plant, the Beloyarsk Nuclear Electric Power Plant, the broad-width mill of the Nizhnetagil'skiy Metallurgical Combine, the Oskol'skiy Electrometallurgical Combine, the Tobol'sk Petrochemical Complex, the Krasnoyarsk Plant for Heavy Excavators, and many other projects basically correspond to modern requirements of scientific-technical progress and the social development of our society.

Distinctive features of the modern progressive project, which guarantees the reduction of specific capital expenditures, estimated cost, material-intensiveness and labor intensiveness of the erection of projects and installations, are a non-standard, creative approach to business, the introduction of the latest technical achievements, results of scientific research, and design developments.

In accordance with the plan of the Central Scientific Research and Planning Institute of Metal Construction Designs imeni N. P. Mel'nikov, the installation of the world's first two-cavity, net-like enclosure with a diameter of 234 meters was completed, with a cupola height of 120 meters of the main building of the All-Union Electrotechnical Institute imeni V. I. Lenin, by the hinge method, with the aid of a rotating semi-arch with blocks of maximum availability, which include the framework, the outward enclosure made from a sheet of 1.5 millimeter-thick Korten-type steel, the internal ceiling, fulfilling the functions of a warmth-keeping jacket, noise suppression, fire and electric corrosion prevention, which secured a reduction of the estimated cost of construction by 1.5 million rubles, or by 19.5 percent, of the labor-intensiveness of construction--by 48,000 man-days, and metal expenditure--by 3,000 tons.

Of great significance in the lowering of the cost, material-intensiveness and labor-intensiveness of the construction of enterprises is the rationalization of their general plans and transportation. We can note the high quality of the general plans for the expansion of the Zhitomir Machine Plant (the State Institute for the Planning of Machinery Plants) and the Alma-Ata Plant for Electric Household Appliances (the Kazakh State Institute for Sanitary-Engineering and General-Construction Planning of Industrial Establishments). The grounds of the plants are located in the industrial district, making use of the existing engineering networks and communications, they envisage a minimum length of new ones, and minimum inter-shop transportation. The density of the development of general plans is high--56 to 57 percent.

However, the cases are still frequent when the quality of the planning and estimate documents of industrial construction projects do not correspond fully to contemporary requirements of scientific-technical progress. The possibilities of blocking buildings and increasing their floor number, securing the reduction of the estimated cost of construction and an economical expenditure of land, are not being fully used. In the selection of plans for the frameworks of buildings and installations, the materials of load-carrying and enclosing structures, the requirements of lowering the labor-intensiveness of construction are not taken into account sufficiently. There are cases of the understating of the estimated cost of construction in the planning stage, which has a negative effect on the planning of capital construction.

In the planning stage, the lowering of cost, material-intensiveness, labor intensiveness and the terms for the erection of projects presupposes the reduction to the minimum of the physical volumes of construction and installation work which is necessary and sufficient for their introduction into operation with the assigned production capacity with observation of the operation qualities being required, as well as the use, in the projects, of the kind of materials and designs that would guarantee minimum labor expenditures in the production of construction and installation work.

In order to solve the indicated task, a variegated study of the projects is necessary. In so doing, success is achieved by the increase of the individual capacity of the technological aggregates and equipment, the blocking of buildings and installations, the enlargement of the net of columns, the rationality of volume and planning solutions, the increase of the density of building, the reduction of the area of buildings and the territory of enterprises. As a result there is not only a decrease in the labor-intensiveness of construction, but its cost and material-intensiveness is also diminished, and that means the combined expenditures of public labor for the creation of a project with an assigned production capacity diminish.

The practice of planning shows that there are important reserves for increasing the quality of projects, the reduction of cost, labor-intensiveness and material-intensiveness of construction. Thus, the location and construction of enterprises as a component of industrial centers with the cooperation of subsidiary and auxiliary services--depending on the number of united enterprises, their size, industrial affiliation, level of cooperation, and other factors--make it possible to reduce capital expenditures by 3-12 percent, the labor-intensiveness of construction--by 2-4 percent, operating expenditures--by 2-8 percent, and the need for territories--by 7-19 percent. A still greater effect can be achieved with the formation of industrial centers in accordance with the principle of waste-free technology with the cooperation not only of subsidiary and auxiliary, but also basic industries, where the wastes of some enterprises serve as the raw material for others.

An important reserve for the reduction of capital expenditures, cost and labor intensiveness of the construction of enterprises of the chemical, petrochemical and some other sectors of industry is the opening of equipment, i. e., its placement not in buildings, but in open stands or sites with arrangement of local shelter in necessary cases. In these cases, there is a substantial



reduction in the construction periods for projects and a sharp decrease in the expenditures for energy resources during their operation, and the cost and labor-intensiveness of construction and installation work decrease up to 15 percent.

To be on the level of contemporary tasks. Constantly to build up the scientific-technical potential. To utilize in the plans for construction all that is most progressive--these tasks confront the collectives of the scientific-technical and planning institutes, their party organizations, which have been granted the right of controlling the activity of the administration. The primary party organizations and the local party organs are called upon to strengthen the organizational and political-educational work, to increase the effectiveness of work with cadres, and to head effective competition for high-quality planning production for the building industry.

A leading direction of the intensification of construction production and further growth of labor productivity continues to be the increase of the level of industrialization of construction on the basis of the use of designs, articles and units with a high degree of plant preparedness.

To the greatest extent, the increase of the prefabricability concerned load-carrying and enclosing structures of buildings and installations. The proportion of fully prefabricated construction was brought to 40 percent, large-panel and volume-unitized housing construction up to 54 percent. However, these indicators characterize mainly the prefabricability of the "boxes" of buildings. As far as other work operations and designs are concerned, the industrial nature is largely missing in their execution. The incompleteness of approach in the development of the industrialization of construction led to the fact that, along with the industrial erection of the frames and boxes, obsolete methods of organizing the "stuffings" of buildings exist: The design of the floors, partitions, roofs, trimming, the installation of engineering equipment systems, the installation of communications, etc. Low is the level of prefabrication of subsidiary-auxiliary projects--substations, pumping stations, cafeterias, consumer and warehouse facilities--the area of which amounts up to 20 percent in industrial and up to 40 percent in agricultural construction. In a number of model projects of calf-sheds, cow-sheds and other animal husbandry facilities, the total prefabrication of projects declines by 26-27 percent because of the non-industrial nature of the designs of the subsidiary-auxiliary premises. Inadequate is the plant preparedness of construction designs and parts. As a result, the correlation of labor expenditures in construction production to labor expenditures in the industries of its material-technical base amount to 3:2, although the contemporary level of the development of construction technology and equipment make it possible to change it to 2:3.

It is planned to develop the further increase of the prefabrication of construction in two ways: First of all, by means of increasing the level of plant preparedness and the level of the enlargement of those designs, where already today predominantly industrial solutions are applied, and, secondly, by means of the development and introduction in mass industrial construction of industrial solutions for those design elements, where the level of prefabrication is not yet adequate. Moreover, the solution of these tasks must be realized jointly.



At the present time, the industry of construction designs and the building industry workers have mastered the output and use of prefabricated reinforced concrete slabs of roofing of 12 meters in length, which make it possible to apply the same spacing of the rafter structures instead of a spacing of 6 meters; slabs of 3 x 6 meters instead of 1.5 x 6 meters; composite slabs of roofing with application, in plant conditions, of heat and steam insulation, covering and lower layers of roofing instead of the execution of this work in construction conditions; zenithal lights of various designs instead of the traditional, labor-intensive light superstructures; light metal designs of comprehensive delivery, making it possible to lower sharply the length of the erection of buildings.

Up to the present time, more than half of the partitions of industrial buildings were made from brick. The use of large panels made of gypsum concrete, extrusion asbestos cement, as well as frame and frame-panel solutions of various materials reduces the labor-intensiveness of the design of partitions by 20-25 percent. With the reduction of the share of brick partitions of up to 20 percent given a corresponding growth of industrial solutions, it is possible to decrease the annual demand for workers in the building industry by 5,000 to 7,000 persons.

Up to 15 percent of the labor-intensiveness of the erection of one-story industrial buildings are accounted for by the structure of the floors. A sharp decrease of it may be attained through the replacement of monolithic floor structures by industrial ones made of reinforced concrete slabs measuring 1.5 x 1.5 meters and 3 x 3 meters, with a clear floor covering applied to them in plant conditions. Depending on the type of covering, the application of such composite slabs reduces the labor-intensiveness of floor structures to 1/6-1/10 of previous work. Regardless of the available design studies, the production of the indicated slabs has not been widely put into effect.

In this connection, the most serious complaints must be made against the construction ministries, which are able and obligated to increase the production of efficient structures in subsidiary enterprises by virtue of the curtailment and removal from production of inefficient enterprises, conducting the necessary technical reequipment of the shops. An analysis, conducted by the USSR State Committee for Construction Affairs, of the plans for organizational-technical measures to increase labor productivity in the 11th Five-Year-Plan of the USSR Ministry of Construction of Heavy Industry Enterprises, the USSR Ministry of Industrial Construction, the USSR Ministry of Construction, and the USSR Ministry of Rural Construction with respect to their utilization of progressive designs and materials at construction sites showed that not one of the indicated ministries envisaged the increase of the production of efficient designs through enterprises subordinated to them, although their output constitutes only 10-40 percent of the demand. At the same time, the ministries, without justification, overstated the orders for efficient designs--by comparison to those set forth by the state plan--made of aluminum and profiled flooring, which are being supplied by enterprises of other ministries and departments. Such an approach is not conducive to the reliability of the fulfillment of plan tasks in regard to putting projects into operation and the growth of labor productivity.

An important reserve for the further increase of the level of the industrialization of the building industry is the expansion of the volume of the application of light-weight metal load-carrying and enclosing structures of combined delivery. Calculations show that, besides the lowering of the labor-intensiveness of construction, light metal enclosing structures guarantee a reduction in the expenditure of steel and cement. They can be applied in more than 50 percent of all buildings destined for industrial use. With such dimensions of introduction, the annual reduction of labor expenditures can amount to 15,000 to 16,000 man-years.

Already now the building industry requires 200,000 tons of thin galvanized sheets, which are used as an effective profiled plating for roofing, as well as for sheathing of walls with a light warmth-keeping jacket. Approximately 15 million square meters of enclosing structures are executed with the use of such sheeting. It is planned to double the volumes of its application, which will make it possible to expand its utilization in roofing and other enclosing structures, as well as for permanent forms in the manufacture of reinforced concrete structures.

An important task is the further improvement of light structural designs and overall plans of buildings, the reduction of their cost and metal-intensiveness, and the reduction of the labor-intensiveness of manufacture and installation. Such work is being conducted. Thus, the mass of roofing of the type Kislovodsk has been decreased by 42 percent, of type Orsk--by 25 percent. The designs of type Berlin have been withdrawn from production and mass production has begun on designs of rectangular welded pipes of type Molodechno.

In the light of the demands for the further growth of the prefabrication of buildings and installations, the reduction of their material-intensiveness and mass, it is consistently planned to reduce the share of the use of small-piece materials, including in the arrangement of internal walls and partitions. It is planned to increase significantly the output of flat asbestos cement sheets and extrusion panels, gypsum board and gypsum fiber sheets of increased strength, cement-shavings slabs, partitions made of gypsum and other slab articles on the basis of gypsum, polymers, natural and artificial porous materials. As a result, it will become possible in the building industry to move to the wide use of frame-sheathing enclosing structures of the "Sandwich" type and mono-panels with foam plastic and mineral wadding warmth-keeping jackets. And this opens up other broad directions for the industrialization of design solutions.

The increase of the use of constructions of wall, roofing, and partitions made lighter with sheet materials requires a corresponding expansion in the production of efficient light heat- and sound-insulating articles of the type of mineral-wadding and fiber glass mats, hard slabs, wood fiber, paper-pearlite articles, and polymer-mineral materials.

In the sphere of roofing materials the accent is placed on the predominant use of rolling surface materials, which saves construction workers from the preparation and application of non-rolling roofing coatings. In civilian buildings this will be solved by means of the use of reinforced concrete attic coatings made of types of concrete which do not require a water-insulating cover, which has already been put into production in practice. In industrial construction

the expansion of the assimilation of mastic overlay coatings.

For the industrialization of finishing work measures to expand the production of materials and articles are necessary, which make possible a sharp decrease in labor expenditures and the improvement of the quality of construction. For floors the increase of parquet and carpet coverings are necessary, for walls-- laminated paper and foil plastics.

Of special significance is the expansion of the volume of the output and perfection of articles made of plastics.

The realization of the entire complex of measures for the further industrialization of the building industry, which is directed at the reduction of cost, capital-intensiveness, material-intensiveness, labor-intensiveness, and the length of construction, requires a programmatic and purposeful approach to the solution of this technical, economic and social problem. Already in the current 11th Five-Year-Plan 160 scientific-technical programs have been developed and realized, which are related to various sectors of the national economy and envisage: The introduction, in the building industry, of new types of industrial, agricultural, and civilian buildings and installations, the architectural planning and design decisions of which guarantee the further development and intensification of the comprehensive industrialization of the building industry; the application of new methods of the formation of industrial centers and complexes, and the general plans of enterprises; the creation and mastery of the industrial production of new building designs and materials, construction machines, mechanisms and tools for the combined mechanization of construction and installation work; the creation and introduction of new methods of organization and technological processes of building industry production; the introduction of progressive technical solutions, the creation and introduction of automated control systems of construction.

Concern for the constant building up of the level of industrialization of the building industry is an important task of the party organizations of the ministries, state committees and departments at the center and at the local level.

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A promising direction of increasing the intensification of the building industry is the transition to the use of more progressive technologies of the production of construction and installation work and methods of organization of the building industry.

A number of progressive technologies and new methods of the production of work have been developed in the industry. In the erection of underground installations and the arrangement of counter-filtration screens, the method of "the wall in the ground" has been widely mastered. The development of the method opens up prospects of cutting slots in the ground by means of high-pressure jets. With their utilization it proved possible, with high productivity, to drill holes in permanently frozen soils with expanded thrust, as the result of which the expenditures in the design of foundations are decreased to 2/5 of their former level.

In the completion of one of the most labor-intensive work operations for the erection of foundations, the technology of their design in rammed foundation pits is effective, in the presence of which the volumes of excavation work are reduced, the level of their mechanization is increased, and the expenditure of materials is reduced in connection with the decrease of the dimensions of foundations.

There are reserves for the further lowering of expenditures of labor and materials in the construction of drilled cast-in-place and precast piles. In the erection of foundations of bridge supports and wharf structures of ports, wide use can be made of pile cases of large diameters, which results in a significant lowering of the expenditure of materials and labor.

In the execution of concrete work operations, a large effect is secured by industrial methods of their execution with the use of various types of inventory casing and automatic concrete pumps. The output of the workers in concrete work in accordance with the indicated technology in the Cherepovets Association for the Construction of Enterprises of the Metallurgical Industry is 2 - 3 times higher than the average output for the USSR Ministry of Construction of Heavy Industry Enterprises. Progressive experience of work output was studied at the All-Union and ministry schools, but its dissemination for the time being, unfortunately, is proceeding at slow rates.

The improvement of the methods of work output requires also the improvement of the means of mechanization, the increase of their operational reliability, productivity, and universality owing to the equipment by various workers' organs. The main thing in so doing consists in the equipment of the building industry with complete sets of machinery, which make it possible to carry out the work by an integrated-mechanized method. Industry is already turning out specialized sets of machines of the type "Avtogreyder" [Motor grader] for the erection of underground installation by the "wall in the ground" method, cement mixer trucks, and automatic concrete pumps. The output of analogous units of machines for the laying of communication lines has begun, including by the trenchless method, for the construction of roads, the execution of roofing, finishing work, and others.

An important task is the decrease in the cost of machines being produced by industry, as well as the improvement of their utilization. The average length of service of construction machines in 1982 remained on the level of 1980 and came to 10-12.4 hours per 24-hour period, including for power shovels--10.7, scrapers--9.9, bulldozers--10.5, caterpillar cranes--12.5, tower cranes--12.4. Intra-shift idling times of construction machinery, according to selective surveys, came to 15.8 percent for the industry in 1982. Their basic reasons were the failure to provide the work front on time as well as the delivery of materials (23-25 percent), malfunctioning of the machinery (12-15 percent), and violations of labor discipline (12-14 percent).

Labor productivity in the industry is negatively affected by the inadequate equipment of construction workers with the means of small-scale mechanization, mechanized and manual tools, and their low quality. The creation of administrations and sectors of small-scale mechanization and the organization of tool supply on their basis is being carried out slowly in the construction ministries and departments. These reasons, in particular, explain the slow decrease of the

use of manual labor in the building industry.

A significant amount of labor, including manual labor, is expended in the building industry for transportation, loading and unloading work, including vertical and horizontal transport of materials from their delivery to the work stations of the workers. The main direction of the reduction of the labor intensiveness of this work is the introduction of container and package transport and delivery of materials. Calculations of the All-Union Scientific Research and Planning Institute of labor in the building industry and the Central Scientific Research and Experimental Planning Institute for the Organization, Mechanization and Technical Assistance to the Building Industry of the USSR State Committee for Construction Affairs show that, as a result of this measure, the labor expenditures in the industry can be lowered by 10-12 percent.

An important factor in the lowering of the labor-intensiveness of construction is the improvement of its organization. The search for ways of increasing labor productivity in installation work led to the creation of a new direction in this type of work--the installation of roofs by means of large blocks, which became possible only thanks to the mastery of light steel designs that made it possible to lower roof mass to 1/5-1/6 that of before. The experience of production-line consolidated prefabrication of roof structures and their installation with large blocks shows that it has many advantages--the shift of dangerous steel erection work on the installation and painting of structures to ground level; the specialization of work, making it possible to mechanize the basic assembly processes by means of the use of stationary equipment; the use of less skilled labor in installation work, and others. As a result of the use of production-line assembly and large-block installation of roofs of buildings, the labor productivity of installers is increasing by a factor of 1.6 to 1.8 in the presence of a significant reduction of the length and improvement of the quality of work.

A significant reduction in labor expenditures at construction sites and in construction periods is secured by the block-unit method of the erection of enterprises, which utilizes unified prefabricated blocks, manufactured in industrial shops, of complete plant finishing with technical equipment established in them beforehand. The advantage of the indicated method was clearly shown in the construction of the Urengoy-Pomary-Uzhgorod Gas Pipeline. Calculations show that the use of the unit-block method in industrial construction will lower the labor-intensiveness of the erection of projects up to 20 percent and their shift cost by 7-10 percent, while reducing the length of construction by a number of times. The transition to the unit-block method of the erection of buildings signifies the beginning of a new stage in the development of industrial construction: The industrial-systems methods of construction.

The main indication of the industrial construction systems of the immediate future is the creation of a single industrial construction production line, which envisages flow-line assembly production on the basis of complete set deliveries of materials, articles and structures, quickly-mountable enlarged and voluminous elements of buildings and installations, large construction blocks and building technology blocks of equipment.

For the transition to industrial-systems methods of construction, the designs of buildings and installations must be oriented toward the use of unified volume-planned schemes, including with module engineering equipment, which must secure the rapid transformation of premises during the change of the products list and production technology. Design solutions for buildings and installations must fully correspond to the requirements of plant manufacture and the most rational methods of line production of work operations which guarantee the speedy erection of projects with the least labor-intensiveness, above all on the basis of the use of complete sets of materials, articles and quickly-mountable blocks.

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The realization of the complex of measures to intensify production in the building industry depends, first of all, on the construction ministries and departments, on their work with respect to the improvement of the organization and administration of production. An important role in this question must be played by the further development and increase of the effectiveness of the brigade contract on the basis of the use of its most progressive form--the multiple flow-line brigade contract, which to a large extent aims all primary labor collectives at the achievement of a better final production result--the timely and ahead-of-schedule introduction of projects into operation with minimal expenditures.

In responding by deed to the tasks set by the December (1983) Plenum of the CPSU Central Committee in regard to the increase of the efficiency of public production, and, in particular, in regard to the above-plan increase of labor productivity by 1 percent and the lowering of the prime cost of construction and installation work by 0.5 percent, the economic managers and the party organizations of the industry--on the basis of the broad development of socialist competition, the increase of efficiency, responsibility, and strictness with respect to all links of the administration of building industry production--must successfully realize the measures in regard to the fulfillment of the outlined plans for capital construction on the basis of the acceleration of the practical introduction of the achievements of scientific and technical progress and progressive production experience.

Of decisive significance is the purposeful political and ideological-educational work of the party organizations in the labor collectives. Clearly delimiting the functions of party committees with tasks of state and economic organs, not allowing duplication, but nevertheless substitutions in their work, necessarily to be able to see and support popular initiative, to eliminate the sluggishness and indifference of some managers, to remember the fact that for every one of its large achievements our economy, to one extent or another, is obliged to the creative initiative of labor collectives--this is the line which our party has set. And it is a matter of honor for every communist and all Soviet people--to put this line absolutely into practice, into the practice of economical construction.

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## CONSTRUCTION PLANNING AND ECONOMICS

### HANDLING OF PRICE REVISION CRITICIZED ; MINISTRIES RESPOND

Moscow EKONOMICHESKAYA GAZETA in Russian No 26, Jun 84 p 18

[Article: "On Revision of Estimated Norms and Prices"]

[Text] The article "New Estimated Norms and Prices" published in No 15 of this weekly newspaper expressed critical comments addressed to a number of ministries, where this work is being performed with extensive delay. The responses received by the editors from the ministries are evidence of the fact that the correct conclusions have been drawn from this criticism. Specifically, Deputy Minister of the Ministry of Machine Building for Animal Husbandry and Fodder Production P. Tsitsin reported that all the construction supervision groups available at the sites have been called upon to expedite work on reviewing estimates.

"The management of the Giprosel'mash Institute [State Institute on Planning Agricultural Machine Building Plants]," the response continues, "has received a reduction in the bonus payment in accordance with the results for the first quarter due to its delay in estimate computations. The course of work on estimate documentation is under the constant control of the ministry."

A. Nikolayev, deputy minister of the USSR Ministry of Industrial Construction, writes that the adopted measures have made it possible to complete the recomputation of norms and prices within the established periods for facilities in the ministry's own production base included in the plan for the current year. Nevertheless, there is a delay within individual subdivisions in reviewing the facility estimates due to untimely submission of rayon unit pricings adapted to local conditions by the project planning institutes of the USSR Gosstroy [State Committee for Construction Affairs]. This applies primarily to the YeRYeR [singular rayon unit pricings] for rayons of the Far North and areas equivalent to them. As a result, the project planning organizations have been unable to begin the scheduled recomputation of estimates for facilities for which the cost of construction-installation work is on the order of 20 percent of the overall volume.

Additional measures are being taken to accelerate the recomputation of estimate documentation for the 1980 plan for capital construction. "The question has been taken under constant control," concludes A. Nikolayev in his letter.

The Deputy Chief of the USSR Mintyazhstroy [Ministry of Construction of Heavy Industry Enterprises] Capital Construction Main Administration, Yu. Kalashnikov reports that the organizations subordinate to the USSR Mintyazhstroy have embarked on the recomputation of estimates in terms of the new prices with considerable delay. Only at the beginning of 1984 did catalogs of unit prices adapted to local conditions in such construction regions as the Kazakh SSR, Donetsk, Voroshilovgrad, Lipetsk, Rostov Oblasts and Krasnoyarsk Kray appear in sufficient quantity. The ministry issued methodical directives to all the subdivisions and called upon the workers of construction organization estimate services to review the documentation for their own capital construction sites.

The response goes on to say that the state of affairs has improved as a result of the adopted measures. The site estimates have been recomputed for most of the construction sites scheduled for operational introduction in the current year.

The editors received an expansive response from the Ministry of the Petroleum Industry. V. Gorishnyy, chief engineer of the Capital Construction Administration, expressed a number of complaints aimed at the USSR Gosstroy, which up to the present time has not ratified or duplicated the full set of manuals of estimated prices for construction materials and structures and pricings for construction work for rayons of the Far North and areas equivalent to them. "This is the main reason for the delay in work on recomputing the estimate documentation for sites in the petroleum industry located in the Tomsk and Arkhangel'sk Oblasts north of the 60th parallel. The publication of a manual of estimated prices for the operation of construction machines and mechanisms for rayons in the Far North has been delayed by more than a year," he states in his letter.

The Ministry of the Petroleum Industry has been unable to begin recomputing price lists for the construction of the linear part of pipelines due to the absence of elementary estimate norms and unit pricings for placement of pipes up to 350 millimeters in diameter which are being developed by the Ministry of Construction of Petroleum and Gas Industry Enterprises.

According to the ministry, in establishing the deadlines for completion of recomputation of the estimate documentation, the USSR Gosstroy did not take into consideration the fact that a great volume of work must be performed. Today all immediate measures are being taken to eliminate delay. Pricing specialists from the sectorial institutes of Kiev, Moscow, Ufa, Volgograd and other cities are being sent to the rayons where there has been the longest delay. A job contract plus bonus system of wage payment has been established for those workers engaged in estimate recomputation, and premium payments have been introduced.

As we can see, measures are being taken, but many ministries still have not met the established deadlines. Evidently, the USSR Gosstroy must also draw the appropriate conclusions.

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## CONSTRUCTION PLANNING AND ECONOMICS

### BONUS SYSTEM CRITICIZED IN BSSR EXPERIMENT UPDATE

Minsk SOVETSKAYA BELORUSSIYA in Russian 22 May 84 p 2

[Article by I. Perovich, chief engineer, USSR Stroybank Belorussian Office: "Financing Interests"]

[Text] A most important problem is currently being solved in capital construction -- the creation of such production facilities which, possessing improved technology, would ensure the rhythmic organization of labor and high product quality with the lowest possible expenditures. At the same time, the problem of reducing the resource consumption of construction and of introducing progressive structures and materials and achievements in science and technology into the sector also remains current. The speech presented by CPSU Central Committee Secretary General K. U. Chernenko at the February Plenum of the CPSU Central Committee told of the necessity of serious restructuring of the system of economic management and of the entire economic management mechanism.

A number of practical measures are being implemented in the republic for reducing material and labor expenditures and for reducing the estimated cost of construction. We must note, however, that the economic management mechanism presently in effect here hinders their successful implementation. It does not provide for economic interest by the planning and contracting organizations in the realization of reserves for reducing resource consumption.

The system of estimate price formation which has evolved is oriented around the determination of cost of facilities based on the volumes of work and of structural elements. Under such conditions, the application of resource-saving decisions in the projects leads to a reduction in the estimated cost of commodity building production, and as a result also to a reduction in the economic incentive funds for workers at the contracting organization. Moreover, expenditures for developing progressive designs are in no way compensated. Since the cost of the construction-installation work is reduced, there is also a reduction in the volume of planning-survey work, and consequently a reduction in the project planners' wage fund.

The sum of profit obtained due to the reduction in cost of project-survey work plays the main role in the profitability of project planning organizations. For example, in 1982 it comprised 21 percent of the work volume performed through the institution's own efforts at the controlled organizations. In 1983 it comprised 20 percent.

The conditions for bonus payments provided by the existing system of planning and economic stimulation do little to promote accelerated introduction of progressive decisions and achievements of science and technology into the projects. An analysis of the structure of the bonus fund for 1983 throughout 13 of the leading project planning organizations in the republic showed that up to 80 percent of this fund is formed generally due to deductions from profit, while bonus payments for excellent quality, reduction of estimated cost of construction, and creation and introduction of new technology play an insignificant role in ensuring the scientific-technical progress of the sector. This fact is a consequence of the situation, as noted above, in which the application of new original and effective technological decisions reduces the basic technical-economic indicators of the project planning and construction organizations.

An experiment is being performed to eliminate the above-mentioned and other shortcomings in construction, as well as to increase the efficiency of economic levers and incentives for the economic management mechanism in the republic. The Stroybank [Bank for Financing Capital Investments] institutions in Belorussia have taken an active part in the realization of this program. The facilities included in the experiment have been taken under control. Technical conferences and training of personnel have been implemented within the bank system for the purpose of studying the methodological positions and tasks of the experiment. Our specialists have been charged with rendering practical aid to construction-installation and project planning organizations and to customers, and with systematically analyzing the financial and economic indicators attained in the course of the experiment.

At the same time, we implemented control over adherence to conditions of the experiment. Sometimes, instead of the application of scientific-technical achievements, simple substitution of materials is proposed, improvement of project planning decisions is performed, and requirements of normative documents are fulfilled.

Thus, the Mogilevgrazhdanproyekt Institute in Mogilev proposed replacing the facing slabs used on walls with the use of facing brick for three dormitories, two houses and a department store. The contracts for re-writing of the documentation on the indicated facilities were not accepted for payment by the bank institutions, since the proposed decisions cannot be viewed as the application of achievements in science, technology and leading experience.

At present we may already see some results of the experiment being performed in the republic. There are 57 project planning organizations and 86 construction organizations participating in the experiment. These fall under the jurisdiction of 18 ministries and departments. The experiment covers 534 facilities. As of 1 January 1984, planning and inspection had been completed on 187 of these facilities, with an estimated construction cost of 148 million rubles. The anticipated savings will comprise over 8 million rubles, or 5.6 percent of the estimated cost. There will be a 7,000 tons reduction in metal expenditure, a 13,000 ton reduction in cement

expenditure, and a 172,000 man-day reduction in the labor consumption for construction. The greatest effectiveness is being achieved at construction sites of production function. Thus, in industrial construction the savings comprise an average of 14.9 percent of the estimated cost of construction-installation work, and in transport construction -- 12 percent.

The collectives of the PromtransNIIProyekt, Belgosproyekt, and Belgiprodor Institutes are active participants in the experiment, and have achieved the greatest reduction in estimated cost of construction. Among the contracting organizations are the organizations of the BSSR Minpromstroy [Ministry of Industrial Construction], USSR Mintransstroy [Ministry of Transport Construction], and the BSSR Minsel'stroy [Ministry of Rural Construction].

The basic directions in the innovative improvement of project decisions under conditions of the experiment consist of improvements in the overall planning and design decisions, the application of progressive materials, and the use of more rational schemes of engineering networks. New methods of computing structures, walls, foundations, and bridge and overpass supports are binding widespread application.

Here is an example. In planning a bridge over the Molotovnya River, the Belgiprodor Institute utilized new design decisions for bank and intermediate supports. The total savings in this case comprised 52,000 rubles, or 27.5 percent of the initial cost. The steel expenditure was reduced by 28 tons, the cement expenditure -- by 163 tons, and the labor expenditures were reduced by over a thousand man-days.

An original design decision for a bridge on the Rutka River in Soligorsk was proposed as a result of joint work performed by the bridge building brigade No 88 of the Mostostroy No 5 Trust and Riga and Minsk designers.

In planning a 9-story large-panel house in Mogilev, the Belgosproyekt Institute used the methodology which it had developed for computing the combined work of the pilings and the monolith framework in transferring stresses to the foundation base. This made it possible to eliminate a significant number of pilings and yielded a savings of 27,200 rubles.

The economic activity of contracting organizations is improving thanks to the application of better developed project decisions. Thus, for 41 of the facilities introduced into operation by organizations of the BSSR Minpromstroy, the estimated cost of construction was reduced by 578,000 rubles. Also, a savings of 431 tons of metal, 2,310 tons of cement, and 15,000 man-days was realized.

The economic effectiveness of the proposals made it possible to implement bonus payments in accordance with the statutes of the experiment. As of 1 January 1984, bonuses were paid to workers of project planning organizations in the sum of 45,300 rubles and 12,400 rubles to workers at contracting organizations.

Until recently the experiment was conducted with application of the estimates ratified until 1 July 1981 as the equivalent stable prices. However, in the future this method of determining the cost of commodity building production can no longer find widespread application.

The methodological positions on conducting the experiment provide for the application of stable estimated prices which consider the achieved level of science and technology as the basic direction. It is necessary to accelerate the development of stable prices by the republic's project planning organizations, since their application would make it possible to increase the level of the applied progressive decisions and designs. As concerns facilities of industrial function, where the effectiveness of the experimental measures is the highest and the development of stable estimated prices is difficult to implement with the exception of facilities of auxiliary and subsidiary function, here it is necessary to resolve the question of equivalent stable prices.

Reconstruction and technical retooling facilities are not participating in the experiment, although we know that under present conditions this direction must become the main one.

Up until the present time, the experiment has practically not touched upon the technological section of the project. The projects which are being re-worked do not differ from preceding ones in their operational characteristics.

As N. N. Slyun'kov, first secretary of the Belorussian Communist Party Central Committee, noted in his speech at the 17th Plenum of the BCP Central Committee, "as yet we have been unable to achieve the wide-scale introduction of scientific-technical developments, and primarily resource-saving technologies, flexible automated systems, robots, handlers, microprocessor technology, and means of automation of planning-design and technological work."

In our opinion, the time has come to develop the methodology for the second stage of the experiment, which would direct the efforts of participants in the investment cycle toward the application of progressive technology in their projects and toward the improvement of the operational characteristics of the enterprises. It would be expedient to involve specialists from scientific-research institutes and from enterprises manufacturing technological equipment in this experiment, taking into consideration the fact that the system of material incentives must also consider their contributions in attaining the end results.

The introduction of the new economic levers into the practice of construction will facilitate the realization of the decisions of the 26th CPSU Congress and the completion of the national economy's transition to a primarily intensive path of development.

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## CONSTRUCTION METHODS AND MATERIALS

### BSSR BUILDING MATERIALS MINISTRY TRIES TO UPGRADE SHODDY BRICK

Minsk PROMYSHLENNOST' BELORUSSII in Russian No 5, May 84 pp 57-59

[Article by N. Bozhko: "Steps Have Been Taken, the Problems Remain"]

[Text] Last year our magazine (No 11) published an article, "Molodechno-Style Brick," by V. Ponomarev. We recall that it dwelt on low quality of brick.

It explained that operating discipline in particular is constantly being violated at the Molodechno Building-Materials Combine and that the enterprise's technical services constantly close their eyes to the deplorable state of the equipment, as do OTK [quality-control section] monitors to the poor quality of raw materials and to violations of the operating processes. And this, as a rule, at a time when the demand for brick is so great.

As Deputy BSSR Minister of Construction Materials Industry I. Rudenko reported to the editorial board, the ministry's collegium examined the article, "Molodechno-Style Brick," and admitted that the facts set forth were true.

The collegium's decree of 11 January 1984 gave a sincere, factual evaluation of deficiencies in the Molodechno Combine's management attributable to Director K. Lychkovskiy and Chief Engineer A. Dudyko. The collegium required that the managers of the combine, Minsk's NIISM [Scientific-Research Institute for Building Materials], the SPKO [Construction and Planning Section] of the Orgtekhstroy [State Trust for the Industrialization of Construction] and other ministry subunits take timely measures to improve output quality. Steps for improving brick-production technology and upgrading the raw materials for the powder pressing of the Obol Ceramics Plant were also planned.

Right now a charging-materials facility is being built at the combine, additional clay-processing equipment for preparing the bulk clay is being installed at the Moros'ki section, and a modern tunnel-kiln with a 4.7-meter wide channel and pulse-type fuel combustion will be put into operation at the Prody section. An integrated mine-geology party is exploring and identifying land sections with good-quality clays at existing fields. And additional equipment, spare parts, materials and financing have been allotted the combine.

Such was the content, briefly, of the answer the ministry gave the board.

"Buildings with tiles and plaster peeled off," says Hero of Socialist Labor, leader of an integrated brigade of SU-5 [Construction Administration No 5] of Minsk SU-1 [Construction Trust No 1] A. Gromov, "are becoming increasingly common in our city. All this is painfully evident. We should be building for centuries, but the brick will be destroyed in a few years. It often comes to the building project with fire cracks and other cracks....It has to be sorted out, and this requires time and additional workers."

Documents also tell about low brick quality: six times last year Trust No 1 complained to the suppliers of facing brick. The basis was clear noncompliance with GOST [State All-Union Standards] requirements. For example, during the construction of two jobs alone (a school on Ulitsa Bagration and an addition to a construction-machinery tekhnikum), the Minsk Ceramics Plant had to exclude 50,000 bricks from the reporting data.

But indeed an encouraging answer was given 2 years ago precisely to A. Gromov and Hero of Socialist Labor and 26th CPSU Party Congress delegate L. Tozik--the authors of an open letter to the BSSR Ministry of Construction Materials Industry V. Bil'dyukovich. It stated, in particular, "The ministry's collegium severely pointed out existing deficiencies in the work to the managers of PO Minskstroymaterialy [Minsk Building-Materials Industry Production Association] and the Minsk Building-Materials Plant and required that specific measures be taken to prohibit the delivery of products that do not meet the requirements of the standards to facilities that are under construction."

It is true that in past years these enterprises had improved certain indicators, but stability in the work was not achieved. Evidence of this are new reports of the construction-trust laboratories. "We categorically object to certification of the facing brick in the first quality category, because of noncompliance with the GOST." This letter arrived at Minskstroy [Minsk Construction Combine] from Trust No 1 last year. Similar comments came from Trusts Nos 4 and 35 and from other construction organizations....In brief, brick that does not conform with the official certification is still arriving at the city's construction projects.

I. Likhut, chief of the Building-Materials Quality Control Section of UGASK [City Office of Architectural and Construction Monitoring] of GlavAPU [Main Architecture and Layout Administration] of the Minsk City Ispolkom, says:

"Last year we made more than 20 checks at plants, construction projects and the UPTK [Production-Equipment Outfitting Administration] base of the Minskstroy Combine. The proportion of rejects at the building-materials plant, although lower than in 1982, was still great, reaching 21 percent. This indicator was still higher at the ceramics plant--as high as 68 percent."

The question of the brick's resistance to cold--a basic indicator of its longevity--is still in dispute. At the initiative of the Minskstroy Combine and the Institute of Construction and Architecture (ISiA) of BSSR Gosstroy, the cold resistance of two-layer facing brick MPZ 150 and MPZ 25 made by Branch No 1 of Minskstroymaterialy Production Association was studied.



"We took brick from the wall of an apartment house on Masherov Prospekt and from a lot at the plant. After five cycles, cracks appeared on the facing surface, and the brick exfoliated and crumbled," said the manager of the Construction Heat-Physics Section of ISiA, Candidate of Engineering Sciences O. Yurkov. "But yet, according to the official certification, the brick should withstand at least 25 cycles. Last year similar studies were made repeatedly by various commissions. The conclusions were unanimous: the brick's cold resistance does not meet the requirements of the standards. As for the brick's appearance: the share of defective output that arrives at job sites reaches 25-40 percent."

Meanwhile, the enterprises' managers assert that they are producing good-quality output. Are there interruptions? Yes, they happen because of the delivery of clay and additives of poor quality and also breakages of equipment. Higher authorities (ISiA of BSSR Gosstroy and the Minskstroy Combine on the one hand, and the Minsk NII [Scientific-Research Institute] for Building Materials and the ministry on the other) can find no common language at all. Some of the test results are negative, while others are positive. They categorically refuse joint tests. The stand of the concerned service of the republic's gosstroy is surprising. Who, if not this organization, is the arbiter in this long, drawn-out dispute?

An authoritative commission which, at the request of the BSSR Council of Ministers, checked the work of the Minsk brickmaking plants, concluded that the technology, particularly that of the ceramics plant of the Minsk Building-Materials Production Association, enables brick to be made completely in accordance with the standards' requirements. The deficiencies observed during the operations of cutting, charging and grading have been eliminated.

It must be said that the necessary conclusions were drawn here, many deficiencies were eliminated and the technology was improved. The construction of the clay storage facility with a solid roof is being completed, and, at the end of January, an automatic charger for the brick, on kiln carts, had been assembled and put into operation.

But there are many such problems at the plant that are difficult for local forces to solve. It is known that the clay that comes from the pit should be "aged." And the longer, the better its quality. At the ceramics' plant storage facility, the storage period does not exceed 3 months....But is the plant to blame for this? It is recommended that 70-80 percent of the clay be brought in during the spring and summer period. Machinery is needed for this. Last year, during the most favorable months, the enterprise was allotted no more than 70 vehicles vs a daily requirement of 90-100. Today this question is being resolved at the ministerial level by the automotive-transport and the construction-materials ministries, but meanwhile the question remains open.

Matters are going poorly also with earthmoving equipment. For loading the clay from the clay-storage facility, there are only two old excavators, the downtime of which because of breakdowns is longer than their operating time. Usually, no more than 300 tons--enough for 1½ work shifts--are stored at the charge-materials storage facility, which is designed for 4,000 tons of material.



Brick-molding department operator L. Vtorin paints the following picture:

"In the morning we were idle because of a lack of clay. There was nothing to load it with--an excavator was broken down. By the time the second one drove up, half the day was gone. Right now the automatic multiple-wire cutter has stopped. Metal has gotten into it."

Previously, porous agglomerate was used as an additive. This year none was allocated. At the recommendation of the NII for Building Materials, an attempt was made to use granulated slag, but there is not enough of it. Moreover, the slag that is brought in from radiator, tractor and motor-vehicle plants contains many foreign inclusions, including metal. It is for this reason, for instance, that many breakdowns occur at the building-materials plant.

Still another problem is the production facility, which has been in operation since before the war. Elementary conditions for normal operation are lacking here. The dryers "leak," which does not allow an even distribution of temperature throughout the chamber's cross-section to be obtained. Mechanization for such labor-intensive processes as charging, grading and laying the brick is lacking, and processing of the bulk clay and cutting and drying are poorly arranged.

Opinions are unanimous at the ministry and at the plant that the old-fashioned production facility should be shut down. However, this would immediately degrade the enterprise's operating indicators. There is one way out--rebuilding. But the ministry has no funds for this....

It is not enough to produce good brick, for it is also necessary to deliver it to the construction site safely and intact. Today, even if good output is produced, there is no assurance at the plant that it will arrive at the job site in proper shape. The enterprise has concluded an agreement with BSSR Gosstabs's Belstroyznabsbyt [BSSR Association for the Sales and Marketing of Building Materials] on the sales of building materials, but the Minsk Office for the Centralized Delivery of Brick is charged with the hauling. The dispatcher who sends the vehicles to the job site unfortunately is not concerned about how the brick will be hauled, whether there are good approach routes at the construction project, and whether the pallets will collapse from the ups and downs. Therefore, this year, in concluding the usual long-term agreement, the building-materials plant recommended that clauses about the acceptance of products in accordance with quality be included. However, Belstroyznabsbyt categorically objected....Today this question is being reviewed by Gosarbitrazh [State Arbitration Board] under the BSSR Council of Ministers. Meanwhile, the Baltic republics have positive experience in such work. The plants themselves deliver the brick to the job site. They see to it that the brick arrives at the job site in good shape. Why not apply this useful experience, why not organize a special service within the ministry staff?

The use of defective facing brick leads to colossal overconsumption of mortar and reduces appreciably the quality of the bricklaying and the output per worker. It is estimated, for example, that if each mason would, when laying brick, reduce the layer of mortar by about a millimeter, the country as a

whole would save 400,000 tons of cement per year. Indeed, Minskstroy Combine jobs alone receive 116 million standard brick equivalents annually.

From the editorial board. This is not the first time our journal has given consideration to the industry's problems. Our reports on this subject have, as a rule, been critical in nature. Steps taken by the ministry to improve the state of affairs have repeatedly been mentioned. But no appreciable changes have occurred. This means it is still early to dot one's "i's" and cross one's "t's" in the talk about brick.

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